

PHMSA Perspectives on Composite Repair

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Presentation Overview

- Pipeline Regulations Review and History
- Code References and History Applicable to Composite Repair
- Guidance and Expectations
- Field Perspective and Issues Observed by PHMSA
- Considerations for ASME PCC-2



Code Language

- Available publicly through Electronic Code of Federal Regulations (E-CFR):
<http://www.ecfr.gov>
- For PHMSA
 - Go to Title 49 – Transportation
 - PHMSA Pipeline is in 190-199: Part 192 Gas; Part 195 Hazardous Liquids
- States have to adopt the Federal code at a minimum, but can be more stringent. If jurisdictional to State, beware of State specific requirements.



Composite repair history and applicability to code

- Composite repair used for decades
- Prior to 1999, special permits and state waivers required
 - Certain products were previously allowed through special permits specific to project(s) identified in special permit request and subject to conditions
 - Continues to be some confusion that these products were allowed and continue to be allowed for all projects regardless of code (not true)
- After 1999 amendments, code now takes precedence and those SPs expired.
 - Everyone plays by same rules today. Any product can be considered without special permit if it meets the performance based requirements of the code and any applicable standards incorporated by reference in the code.



Code References and Performance Based Requirements

Repaired or repair the pipe “**by a method that reliable engineering tests and analyses show can permanently restore the serviceability of the pipe**”

- § 192.309 Repair of steel pipe
- § 192.485 Remedial measures: Transmission lines
- § 192.487 Remedial measures: Distribution lines other than cast iron or ductile iron lines
- § 192.713 Transmission lines: Permanent field repair of imperfections and damages
- § 195.585 What must I do to correct corroded pipe



Guidance and Expectations

- Some information on general expectations in
 - The preambles of NPRM and Final Rule for 1999 amendments
 - Interpretation Nov 18, 2010
- If used, we would expect the operators to do an adequate job selecting the right materials/methods for their operations, which would include getting appropriate testing data, etc.



Preamble language

- More language of guidance/intent in preamble:
Search via www.regulations.gov or just google the following
- 16884 Federal Register / Vol. 64, No. 66 / Wednesday, April 7, 1999 / Proposed Rules
 - Proposed Rule [Docket No. RSPA–98–4733; Notice 1]
- 69660 Federal Register / Vol. 64, No. 239 / Tuesday, December 14, 1999 / Rules and Regulations
 - Final Rule ([Docket No. RSPA–98–4733; Amdt. 192–88; 195–68])



Interpretation PI-10-0013 Nov 18, 2010

- PHMSA Pipeline Interpretations:
<http://www.phmsa.dot.gov/pipeline/regs/interps>
- 1. Do these regulations limit the number of discrete applications or the length of application of alternative repair systems?
 - It depends
- 2. Can alternative repair systems be used to increase the pressure capacity of a span of pipeline above the original maximum operating pressure in response to revised operating demands?
 - No. No repair method can be used to increase original design strength or pressure of segment above established maximum operating pressure.
- 3. Can alternative repair systems be used to address the need to lower stress levels in the base pipe in response to a change in class location or other revised operating conditions?
 - No. A change in Class Location is not a repair issue.



Compliance Review Considerations

- Does PHMSA Pipeline endorse/recommend/approve specific products? No. There has been some confusion in a couple areas
 - Certain products were previously allowed through special permits prior to 1999 code amendment. Code now takes precedence, and those SPs expired. Everyone plays by same rules
 - Operators expected to have listing in their Operating and Maintenance (O&M) manual of their approved methodologies for repairs that they allow for all types of defects that they repair (corrosion, cracks, dents, etc.)
 - Must include documentation showing operator (engineering) reviewed the repair methodology's test results and approved for inclusion in O&M, and reliable engineering tests and analyses show as method that can permanently restore serviceability of the pipe.
 - Inspector will review for adequacy, but does not result in explicit approval from PHMSA.



Field Perspective

- We have heard of issues and failures, most of which are anecdotal
 - Typically not reportable at Federal level or there are multiple contributing factors. There have been more reportable incidents at State level.
- Most issues procedural in nature, such as not following appropriate procedures during installation, or operator using a method/product that's not in O&M
- Other issues we see:
 - Health and safety issues: employees who were applying the repair materials did not appear to have the proper PPE

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Max's (and some others') current list of no-nos

- Applications of composite repair on leaking pipes
- Application of composite repair on girth welds where there is corrosion. May be ok if appropriate testing, but in general we'd like to see that avoided if possible
- Composite repairs on defects that were cracks
 - Operator called it a temporary repair. No provisions for temporary repairs in this sense. All repairs must meet requirements to permanently restore serviceability



Opportunities for continued communication

- Clear understanding and communication of potential failure modes, cyclic fatigue effects
- Consideration of interactive threats in the design and selection of repair products
- Application and consideration for more complicated installations - more aggressive dents, gouges, cracks, wrinkle bends over longer spans
- More manufacturers willing to say no, if their product may not be best approach
- How to inspect/assess integrity post installation
- Joint Industry Projects like this one

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ASME PCC-2 consideration

- PHMSA actively engaged on ASME PCC-2 subgroup on non-metallic subgroup and supports the efforts of the group
- Generally considered the “go-to” standard by many and a good idea if composite repair products are able to meet PCC-2
- However, as PCC-2 is not incorporated by reference in the code currently, do not have to necessarily meet ASME PCC-2 to comply with current code.
- PHMSA supports efforts to get PCC-2 incorporated via standards like ASME B31.4 or B31.8, but defers to the standard development process in those committees
- CRUG Certification process could be a useful vehicle
- At end of day up to operator on what they’re comfortable using in their systems and up to inspectors to determine adequacy of operators’ compliance with code

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Questions



Thank you!
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